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Relevance scale ☐ ☐ ☐ ☐ ☐**1** [A structural view of the Cedar programming environment](#)

Daniel C. Swinehart, Polle T. Zellweger, Richard J. Beach, Robert B. Hagmann

August 1986 **ACM Transactions on Programming Languages and Systems (TOPLAS)**, Volume 8 Issue 4

Full text available: pdf(6.32 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents an overview of the Cedar programming environment, focusing on its overall structure—that is, the major components of Cedar and the way they are organized. Cedar supports the development of programs written in a single programming language, also called Cedar. Its primary purpose is to increase the productivity of programmers whose activities include experimental programming and the development of prototype software systems for a high-performance personal computer. T ...

2 [Towards robust features for classifying audio in the CueVideo system](#)

Savitha Srinivasan, Dragutin Petkovic, Dulce Ponceleón

October 1999 **Proceedings of the seventh ACM international conference on Multimedia (Part 1)**

Full text available: pdf(867.70 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The role of audio in the context of multimedia applications involving video is becoming increasingly important. Many efforts in this area focus on audio data that contains some built-in semantic information structure such as in broadcast news, or focus on classification of audio that contains a single type of sound such as clear speech or clear music only. In the CueVideo system, we detect and classify audio that consists of mixed audio, i.e. combinations of speech and music ...

Keywords: audio segmentation and classification, speech/music discrimination**3** [External memory algorithms and data structures: dealing with](#)**massive data**

Jeffrey Scott Vitter

June 2001 **ACM Computing Surveys (CSUR)**, Volume 33 Issue 2

Full text available:  [pdf\(828.46 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


Data sets in large applications are often too massive to fit completely inside the computers internal memory. The resulting input/output communication (or I/O) between fast internal memory and slower external memory (such as disks) can be a major performance bottleneck. In this article we survey the state of the art in the design and analysis of external memory (or EM) algorithms and data structures, where the goal is to exploit locality in order to reduce the I/O costs. We consider a varie ...

Keywords: B-tree, I/O, batched, block, disk, dynamic, extendible hashing, external memory, hierarchical memory, multidimensional access methods, multilevel memory, online, out-of-core, secondary storage, sorting

4 [Implicit coscheduling: coordinated scheduling with implicit information in distributed systems](#)

Andrea Carol Arpaci-Dusseau

August 2001 **ACM Transactions on Computer Systems (TOCS)**, Volume 19 Issue 3

Full text available:  [pdf\(1.83 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


In modern distributed systems, coordinated time-sharing is required for communicating processes to leverage the performance of switch-based networks and low-overhead protocols. Coordinated time-sharing has traditionally been achieved with gang scheduling or explicit coscheduling, implementations of which often suffer from many deficiencies: multiple points of failure, high context-switch overheads, and poor interaction with client-server, interactive, and I/O -intensive workloads. I ...

Keywords: clusters, coscheduling, gang scheduling, networks of workstations, proportional-share scheduling, two-phase waiting

5 [S-connect: from networks of workstations to supercomputer performance](#)

Andreas G. Nowatzky, Michael C. Browne, Edmund J. Kelly, Michael Parkin

May 1995 **ACM SIGARCH Computer Architecture News , Proceedings of the 22nd annual international symposium on Computer architecture**, Volume 23 Issue 2

Full text available:  [pdf\(1.38 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

S-Connect is a new high speed, scalable interconnect system that has been developed to support networks of workstations to efficiently share computing resources. It uses off-the-shelf CMOS technology to directly drive fiber-optic systems at speeds greater than 1 Gbit/sec and can realize bisection bandwidths comparable to high-end MPP systems while being >10x more cost-effective. S-Connect systems do not rely on centralized switches, but rather are composed of adaptive, topology independent ...

6 [SIGSAM BULLETIN: Computer algebra in the life sciences](#)

Michael P. Barnett

December 2002 **ACM SIGSAM Bulletin**, Volume 36 Issue 4

Full text available:  [pdf\(240.15 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

This note (1) provides references to recent work that applies computer algebra (CA) to the life sciences, (2) cites literature that explains the biological background of each application, (3) states the mathematical methods that are used, (4) mentions the benefits of CA, and (5) suggests some topics for future work.

7 Video analysis, retrieval, and summarizing: Constructing a bowling information system with video content analysis

Wen Wen Hsieh, Arbee L.P. Chen

November 2003 **Proceedings of the first ACM international workshop on Multimedia databases**

Full text available:  pdf(1.27 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


In this paper, we present a design and implementation of a bowling information system. This system contains three types of bowling game information including the bowling video content information, the game-related information and the player information. The MPEG-7 Description Schemes are used to describe these types of information and the relationships among them. This information is obtained through an annotator by which manual conceptual feature annotation (for the player and game-related info ...

Keywords: MPEG-7, bowling events, question-answering (fact retrieval) systems, video analysis, video content extraction, video summarization

8 System architectures for computer music

John W. Gordon

June 1985 **ACM Computing Surveys (CSUR)**, Volume 17 Issue 2

Full text available:  pdf(4.61 MB)


Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

Computer music is a relatively new field. While a large proportion of the public is aware of computer music in one form or another, there seems to be a need for a better understanding of its capabilities and limitations in terms of synthesis, performance, and recording hardware. This article addresses that need by surveying and discussing the architecture of existing computer music systems. System requirements vary according to what the system will be used for. Common uses for co ...

9 The distributed ASCI Supercomputer project

Henri Bal, Raoul Bhoedjang, Rutger Hofman, Criel Jacobs, Thilo Kielmann, Jason Maassen, Rob van Nieuwpoort, John Romein, Luc Renambot, Tim Rühl, Ronald Veldema, Kees Verstoep, Aline Baggio, Gerco Ballintijn, Ihor Kuz, Guillaume Pierre, Maarten van Steen, Andy Tanenbaum, Gerben Doornbos, Desmond Germans, Hans Spoelder, Evert-Jan Baerends, Stan van Gisbergen, Hamideh Afsermanesh, Dick van Albada, Adam Belloum, David Dubbeldam, Zeger Hendrikse, Bob Hertzberger, Alfons Hoekstra, Kamil Iskra, Drona Kandhai, Dennis Koelma, Frank van der Linden, Benno Overeinder, Peter Sloot, Piero Spinnato, Dick Epema, Arjan van Gemund, Pieter Jonker, Andrei Radulescu, Cees van Reeuwijk, Henk Sips, Peter Knijnenburg, Michael Lew, Floris Sluiter, Lex Wolters, Hans Blom, Cees de Laat, Aad van der Steen

October 2000 **ACM SIGOPS Operating Systems Review**, Volume 34 Issue 4

Full text available:  pdf(1.31 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

The Distributed ASCI Supercomputer (DAS) is a homogeneous wide-area distributed system consisting of four cluster computers at different locations. DAS has been used for research on communication software, parallel languages and programming systems, schedulers, parallel applications, and distributed applications. The paper gives a preview of the most interesting research results obtained so far in the DAS project.

10 Automatic audio content analysis

Silvia Pfeiffer, Stephan Fischer, Wolfgang Effelsberg

February 1997 **Proceedings of the fourth ACM international conference on Multimedia**

Full text available:  pdf(888.28 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: audio content analysis, audio indexing and retrieval, audio segmentation, audio toolbox, violence detection

11 Sensing techniques for mobile interaction

Ken Hinckley, Jeff Pierce, Mike Sinclair, Eric Horvitz

November 2000 **Proceedings of the 13th annual ACM symposium on User interface software and technology**


Full text available:  pdf(389.16 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: context-awareness, input devices, interaction techniques, mobile devices, mobile interaction, sensing, sensors

12 Query evaluation techniques for large databases

Goetz Graefe

June 1993 **ACM Computing Surveys (CSUR)**, Volume 25 Issue 2

Full text available:  pdf(9.37 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)


Database management systems will continue to manage large data volumes. Thus, efficient algorithms for accessing and manipulating large sets and sequences will be required to provide acceptable performance. The advent of object-oriented and extensible database systems will not solve this problem. On the contrary, modern data models exacerbate the problem: In order to manipulate large sets of complex objects as efficiently as today's database systems manipulate simple records, query-processi ...

Keywords: complex query evaluation plans, dynamic query evaluation plans, extensible database systems, iterators, object-oriented database systems, operator model of parallelization, parallel algorithms, relational database systems, set-matching algorithms, sort-hash duality

13 Course and exercise sequencing using metadata in adaptive hypermedia learning systems

Stephan Fischer

March 2001 **Journal on Educational Resources in Computing (JERIC)**

Full text available:  pdf(115.01 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In the last few years the (semi-) automatic sequencing of course material has become an important research issue, particularly the standardization of metadata for educational resources. Sequencing can help to generate hypermedia documents which, at their best match the learner's needs. To perform (semi-) automatic course sequencing, a knowledge library as well as modular resources can be used. Both must be described by metadata. ...

Keywords: adaptive hypermedia systems, hypermedia learning, knowledge engineering, sequencing of course material

14 Associative and Parallel Processors

Kenneth J. Thurber, Leon D. Wald

December 1975 **ACM Computing Surveys (CSUR)**, Volume 7 Issue 4


Full text available:  pdf(2.62 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

15 A bandwidth-efficient architecture for media processing

Scott Rixner, William J. Dally, Ujval J. Kapasi, Bruce K. Khailany, Abelardo López-Lagunas, Peter R. Mattson, John D. Owens

November 1998 **Proceedings of the 31st annual ACM/IEEE international symposium on Microarchitecture**

Full text available:  pdf(1.32 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

16 Compiler-based I/O prefetching for out-of-core applications

Angela Demke Brown, Todd C. Mowry, Orran Krieger

May 2001 **ACM Transactions on Computer Systems (TOCS)**, Volume 19 Issue 2

Full text available:  pdf(499.03 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)


Current operating systems offer poor performance when a numeric application's working set does not fit in main memory. As a result, programmers who wish to solve "out-of-core" problems efficiently are typically faced with the onerous task of rewriting an application to use explicit I/O operations (e.g., read/write). In this paper, we propose and evaluate a fully automatic technique which liberates the programmer from this task, provides high performance, and requires only minima ...

Keywords: compiler optimization, prefetching, virtual memory

17 GISMO: a Generator of Internet Streaming Media Objects and workloads

Shudong Jin, Azer Bestavros

December 2001 **ACM SIGMETRICS Performance Evaluation Review**, Volume 29 Issue 3

Full text available:  pdf(1.10 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a tool called GISMO (Generator of Internet Streaming Media Objects and workloads). GISMO enables the specification of a number of streaming media access characteristics, including object popularity, temporal correlation of request, seasonal access patterns, user session durations, user inter-activity times, and variable bit-rate (VBR) self-similarity and marginal distributions. The embodiment of these characteristics in GISMO enables the generation ...

18 Static scheduling algorithms for allocating directed task graphs to multiprocessors

Yu-Kwong Kwok, Ishfaq Ahmad

December 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 4

Full text available:  pdf(723.58 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Static scheduling of a program represented by a directed task graph on a multiprocessor system to minimize the program completion time is a well-known problem in parallel processing. Since finding an optimal schedule is an NP-complete problem in general, researchers have resorted to devising efficient heuristics. A plethora of heuristics have been proposed based on a wide spectrum of techniques, including branch-and-bound, integer-programming, searching, graph-theory, randomization, genetic ...


Keywords: DAG, automatic parallelization, multiprocessors, parallel processing, software

tools, static scheduling, task graphs

19 Pipeline Architecture

C. V. Ramamoorthy, H. F. Li

January 1977 **ACM Computing Surveys (CSUR)**, Volume 9 Issue 1

Full text available:  [pdf\(3.53 MB\)](#)


Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



20 Automatic creation of exercises in adaptive hypermedia learning systems

Stephan Fischer, Ralf Steinmetz

May 2000 **Proceedings of the eleventh ACM on Hypertext and hypermedia**

Full text available:  [pdf\(70.28 KB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



Keywords: adaptive hypermedia systems, hypermedia learning, knowledge engineering, sequencing of course material

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Relevance scale ☐ ☐ ☐ ☐ ☐**21 [GAMS: a framework for the management of scientific software](#)**

Ronald F. Boisvert, Sally E. Howe, David K. Kahaner

December 1985 **ACM Transactions on Mathematical Software (TOMS)**, Volume 11 Issue 4

Full text available: pdf(2.83 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The Guide to Available Mathematical Software (GAMS) provides a framework for both a scientist-end-user and a librarian-maintainer to deal with large quantities of mathematical and statistical software. This framework includes a classification scheme for mathematical and statistical software, a database system to manage information about this software, and both an on-line interactive consulting system and a printed catalog for providing users with access to this information. A description is ...

22 [Motion capture for the rest of us](#)

Margaret S. Geroch

January 2004 **The Journal of Computing in Small Colleges**, Volume 19 Issue 3

Full text available: pdf(56.71 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We are all aware of the increasingly realistic computer-generated human motion that abounds in movies, advertisements and especially games at present. This natural-looking appearance in many cases is attributed, as it has been for years, to the fine skills of professional animators in the Disney tradition. But more and more these realistic motions also involve the use of motion capture. We present the case that motion capture concepts and techniques are not the exclusive domain of big movie stud ...

23 [The input/output complexity of sorting and related problems](#)

Alok Aggarwal, Jeffrey S. Vitter

August 1988 **Communications of the ACM**, Volume 31 Issue 9

Full text available: pdf(1.37 MB)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We provide tight upper and lower bounds, up to a constant factor, for the number of inputs and outputs (I/Os) between internal memory and secondary storage required for five sorting-related problems: sorting, the fast Fourier transform (FFT), permutation networks, permuting, and matrix transposition. The bounds hold both in the worst case and in the average case, and in several situations the constant factors match. Secondary storage is modeled as a magnetic disk capable of transferring P b ...

24 Picture Processing by Computer

Azriel Rosenfeld

September 1969 **ACM Computing Surveys (CSUR)**, Volume 1 Issue 3

Full text available:  [pdf\(2.69 MB\)](#)


Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



25 An experimental laboratory for pattern recognition and signal processing

N. M. Herbst, P. M. Will

April 1972 **Communications of the ACM**, Volume 15 Issue 4

Full text available:  [pdf\(2.02 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#)

An interactive computer-controlled scanning and display system has been in operation at the IBM Thomas J. Watson Research Center for three years. The system includes two flying-spot scanners and a TV camera specially interfaced to a process control digital computer, dot-mode and vector displays, analog input and output facilities, and a variety of other experimental equipment. The system design and programming support are described and typical applications in scanner control, optical charac ...

Keywords: image processing, interactive terminal, pattern recognition, pseudorandom displays, scanners



26 A survey on wavelet applications in data mining

Tao Li, Qi Li, Shenghuo Zhu, Mitsunori Ogiwara

December 2002 **ACM SIGKDD Explorations Newsletter**, Volume 4 Issue 2

Full text available:  [pdf\(330.06 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)


Recently there has been significant development in the use of wavelet methods in various data mining processes. However, there has been written no comprehensive survey available on the topic. The goal of this is paper to fill the void. First, the paper presents a high-level data-mining framework that reduces the overall process into smaller components. Then applications of wavelets for each component are reviewed. The paper concludes by discussing the impact of wavelets on data mining research an ...



27 Computation migration: enhancing locality for distributed-memory parallel systems

Wilson C. Hsieh, Paul Wang, William E. Weihl

July 1993 **ACM SIGPLAN Notices , Proceedings of the fourth ACM SIGPLAN symposium on Principles and practice of parallel programming**, Volume 28 Issue 7

Full text available:  [pdf\(1.23 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We describe computation migration, a new technique that is based on compile-time program transformations, for accessing remote data in a distributed-memory parallel system. In contrast with RPC-style access, where the access is performed remotely, and with data migration, where the data is moved so that it is local, computation migration moves part of the current thread to the processor where the data resides. The access is performed at the remote processor, and the migrated ...



28 MEDEA workshop: 100 GOPS vision processor for automotive applications

Ulrich Ramacher, Nico Brüs, Ulrich Hachmann, Jens Harnisch, Wolfgang Raab, Axel Techmer

March 2003 **ACM SIGARCH Computer Architecture News**, Volume 31 Issue 1

Full text available:  [pdf\(2.19 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Car vision systems for the improvement of driver's comfort and safety will be introduced in




the next car generation, with an exponential market growth in the next years. The Corporate Research division of Infineon Technologies AG has developed a fully programmable vision processor, which fulfills the requirements of low power, low system costs, and high computational performance (e.g., robust approaches for object detection based on stereo processing need a performance of more than 15 GIPS).The ...

29 Regular contributions: DSP architectures: past, present and futures

Edwin J. Tan, Wendi B. Heinzelman

June 2003 **ACM SIGARCH Computer Architecture News**, Volume 31 Issue 3

Full text available:  [pdf\(1.27 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#)

As far as the future of communication is concerned, we have seen that there is great demand for audio and video data to complement text. Digital signal processing (DSP) is the science that enables traditionally analog audio and video signals to be processed digitally for transmission, storage, reproduction and manipulation. In this paper, we will explain the various DSP architectures and its silicon implementation. We will also discuss the state-of-the art and examine the issues pertaining to pe ...

30 Session 19: biomedical applications: Orientation determination in the 3D reconstruction of icosahedral viruses using a parallel computer

C. A. Johnson, N. I. Weisenfeld, B. L. Trus, J. F. Conway, R. L. Martino, A. C. Steven

November 1994 **Proceedings of the 1994 ACM/IEEE conference on Supercomputing**

Full text available:  [pdf\(1.20 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#)

Three dimensional image reconstruction from cryo-electron micrographs allows the capsid structures of icosahedral viruses to be studied. The most computationally demanding stages of the reconstruction process are those that find and refine the orientations of the virus particles. We have devised and implemented parallel solutions to the problem of determining these orientations. By enabling determination of the orientations of far more particles than previously had been possible, parallel proces ...

31 Multigrain shared memory

Donald Yeung, John Kubiawicz, Anant Agarwal

May 2000 **ACM Transactions on Computer Systems (TOCS)**, Volume 18 Issue 2

Full text available:  [pdf\(369.18 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

Parallel workstations, each comprising tens of processors based on shared memory, promise cost-effective scalable multiprocessing. This article explores the coupling of such small- to medium-scale shared-memory multiprocessors through software over a local area network to synthesize larger shared-memory systems. We call these systems Distributed Shared-memory MultiProcessors (DSMPs). This article introduces the design of a shared-memory system that uses multiple granularities of sharing, ca ...

Keywords: distributed memory, symmetric multiprocessors, system of systems

32 Quo Vadimus: computer science in a decade

J. F. Traub

June 1981 **Communications of the ACM**, Volume 24 Issue 6

Full text available:  [pdf\(2.35 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

A panel discussion was held during the third biennial meeting of chairmen of Ph.D.-granting computer science departments in June, 1978 at Snowbird, Utah, a meeting sponsored by the Computer Science Board. Invitees from industry and government were also present. A report was prepared from tapes made of the discussion (Department of Computer Science,

Carnegie-Mellon University: Report #CMU-CS-80-127, June 1980). It contained all the prepared statements of the panelists, lightly edited, and th ...

33 Whither J: observations at the J user conference 2000

Cliff Reiter

September 2000 **ACM SIGAPL APL Quote Quad**, Volume 31 Issue 1


Full text available:  pdf(515.30 KB) Additional Information: [full citation](#), [references](#), [index terms](#)



34 CAPS: a coding aid for PASM

James E. Lumpp, Samuel A. Fineberg, Thomas L. Casavant, Wayne G. Nation, Edward C. Bronson, Howard Jay Siegel, Pierre H. Pero, Dan C. Marinescu, Thomas Schwederski

November 1991 **Communications of the ACM**, Volume 34 Issue 11

Full text available:  pdf(5.80 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Programming parallel machines is very difficult. First, generating an algorithm requires the programmer to assimilate the interactions of multiple threads of control. Second, synchronization and communication among the threads must be addressed to avoid contention and deadlock. Then, once the program is executing on the parallel system and does not function correctly or performs poorly, the debugging of multiple threads is a complicated problem [21]. Additionally, debugging software is an a ...

Keywords: instrumentation



35 Mechanisms and policies for supporting fine-grained cycle stealing

Kyung Dong Ryu, Jeffrey K. Hollingsworth, Peter J. Keleher

May 1999 **Proceedings of the 13th international conference on Supercomputing**

Full text available:  pdf(1.17 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: cluster computing, high-performance computing, networks of workstations, parallel computing



36 Watermarking cyberspace

Hal Berghel

November 1997 **Communications of the ACM**, Volume 40 Issue 11

Full text available:  pdf(1.70 MB) Additional Information: [full citation](#), [citations](#), [index terms](#)



37 Providing end-to-end statistical performance guarantees with bounding interval dependent stochastic models

Hui Zhang, Edward W. Knightly

May 1994 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1994 ACM SIGMETRICS conference on Measurement and modeling of computer systems**, Volume 22 Issue 1

Full text available:  pdf(941.34 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper demonstrates a new, efficient, and general approach for providing end-to-end performance guarantees in integrated services networks. This is achieved by modeling a



traffic source with a family of bounding interval-dependent (BIND) random variables and by using a rate-controlled service discipline inside the network. The traffic model stochastically bounds the number of bits sent over time intervals of different length. The model captures different source behavior over different t ...

38 Computer-aided design of nonlinear dynamic systems

M. A. Murray-Lasso, Steiner Espestøyl

June 1970 **Proceedings of the 7th workshop on Design automation**


Full text available:  pdf(935.43 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

With the advent of large memory, fast digital computers with convenient input-output devices and for which high-level problem-oriented languages are available in a time-shared environment, it is becoming increasingly desirable to develop digital computer programs for the design of complex control systems. For some time the analog computer has been used for this purpose. In this paper a large digital computer program, called OLDS (On Line dynamic system

39 SPL: a language and compiler for DSP algorithms

Jianxin Xiong, Jeremy Johnson, Robert Johnson, David Padua

May 2001 **ACM SIGPLAN Notices , Proceedings of the ACM SIGPLAN 2001 conference on Programming language design and implementation**, Volume 36 Issue 5

Full text available:  pdf(1.31 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We discuss the design and implementation of a compiler that translates formulas representing signal processing transforms into efficient C or Fortran programs. The formulas are represented in a language that we call SPL, an acronym from Signal Processing Language. The compiler is a component of the SPIRAL system which makes use of formula transformations and intelligent search strategies to automatically generate optimized digital signal processing (DSP) libraries. After a discussion of the t ...

40 Out-of-core FFTs with parallel disks

Thomas H. Cormen, David M. Nicol

December 1997 **ACM SIGMETRICS Performance Evaluation Review**, Volume 25 Issue 3

Full text available:  pdf(1.37 MB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We examine approaches to computing the Fast Fourier Transform (FFT) when the data size exceeds the size of main memory. Analytical and experimental evidence shows that relying on native virtual memory with demand paging can yield extremely poor performance. We then present approaches based on minimizing I/O costs with the Parallel Disk Model (PDM). Each of these approaches explicitly plans and performs disk accesses so as to minimize their number.

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